W. W. DUFFIELD, resigned. Professor PRITCHETT was Assistant Astronomer at the Naval Observatory, Washington, from 1878 to 1880. He has engaged in work for the survey in China and Japan, as well as in the United States.

THE TELEGRAPHIC LONGITUDE NET OF THE UNITED STATES.

In the *Astronomical Journal*, No. 412, Professor CHARLES A. SCHOTT, of the United States Coast and Geodetic Survey, publishes a brief summary of the longitude work done by the Survey between 1866 and 1896. From this paper, the following extracts are taken:—

In 1851, S. C. WALKER, Assistant, reported the following values for the longitude of the Cambridge Observatory:—

	West of Greenwich.		
	h	m	s
From Moon culminations,	4	44	28.42
From eclipses, transits, and occultations,	4	44	29.64
By chronometric expeditions,	4	44	30.10

In the autumn of 1845, Superintendent BACHE instructed Assistant WALKER to devise practical means for the employment of the electric telegraph (publicly tested by MORSE in May, 1844) for longitude work. With the co-operation of the United States Naval Observatory, the cities of Washington and Philadelphia were connected on October 10, 1846, and their difference of longitude was found to be $7^m\ 34^s.3$. After Professor WALKER'S retirement in 1852, Dr. B. A. GOULD took charge of the longitude work of the Survey up to 1867; the Coast Survey Report of that year contains his report "On the Longitude between America and Europe from Signals through the Atlantic Cable." The resulting longitude of the Cambridge Observatory was $4^h\ 44^m\ 30^s.85$.

Other cable determinations were secured by the Coast Survey in 1870 and 1872, but the latest determination, in 1892, is due to the co-operation of the McGill College Observatory at Montreal, Canada, with the Greenwich Observatory.

The final value for the longitude of the Harvard Observatory at Cambridge, as adjusted in June, 1897, is,—

$$4^h\ 44^m\ 31^s.046 \pm 0^s.048.$$

The longitude net as developed during thirty years, including some European stations, is composed of forty-five stations, connected by seventy-two links. Practically, three lines cross the continent, one near our nothern boundary, one near the southern,

and an intermediate one and the three are connected by cross lines. The smallness of the probable errors of measure shows the satisfactory character of the observations.

The table of final resulting longitudes west of Greenwich is as follows:—

	h	m	s	
Greenwich, England (Transit circle)	0	0	0.000	
Paris, France (Meridian of France)	0	9	20.968	E.
Brest, France (Tower of St. Louis)	0	17	57.597	
Foilhommerum, Ireland (Transit)	0	41	33.409	
Heart's Content, Newfoundland (Transit)	3	33	29.788	
St. Pierre Island, Miquelon Group (Transit)	3	44	42.427	
Calais, Maine (Transit)	4	29	7.857	
Duxbury, Mass. (Transit)	4	42	40.858	
Cambridge, Mass. (Dome, Harvard College Obs'y)	4	44	31.046	
Montreal, Canada (Transit McGill College Obs'y)	4	54	18.634	
Albany, N. Y. (Dome, Dudley Obs'y; old site)	4	34	59.992	
Cape May, N. J. (Transit)	4	59	43.045	
Washington, D. C. (Dome U. S. N. Obs'y; old site)	5	8	12.153	
Charleston, S. C. (Transit)	5	19	44.076	
Key West, Fla. (Transit)	5	27	13.579	
Detroit, Mich. (Transit of 1891)	5	32	11.830	
Atlanta, Ga. (Transit of 1896)	5	37	33.338	
Cincinnati, O. (Dome, Mt. Lookout Obs'y)	5	37	41.398	
Louisville, Ky. (Transit)	5	43	3.636	
Nashville, Tenn. (Transit)	5	47	8.083	
Chicago, Ill. (Transit of 1891)	5	50	29.446	
New Orleans, La. (Transit of 1895)	6	0	16.763	
St. Louis, Mo. (Transit, 1882, of Washington Univ.)	6	0	49.256	
Little Rock, Ark. (Transit)	6	9	5.727	
Minneapolis, Minn. (Transit)	6	12	56.845	
Kansas City, Mo. (Transit)	6	18	21.404	
Galveston Tex. (Transit of 1895)	6	19	9.928	
Omaha, Neb. (Transit)	6	23	46.087	
Austin, Tex. (Transit)	6	30	57.024	
Bismarck, N. D. (Transit)	6	43	7.938	
Colorado Springs, Colo. (Transit of 1886)	6	59	16.710	
Santa Fe, N. M. (Transit)	7	3	46.805	
El Paso, Tex. (Transit)	7	5	57.386	
Nogales, Ariz. (Transit)	7	23	45.912	
Salt Lake City, Utah (Transit)	7	27	35.173	
Helena, Mont. (Transit)	7	28	8.789	
Needles, Cal. (Transit)	7	38	24.836	
Yuma, Ariz. (Transit)	7	38	29.608	
San Diego, Cal. (Transit of 1892)	7	48	38.748	
Los Angeles, Cal. (Transit of 1892)	7	53	1.561	
Walla Walla, Wash. (Transit)	7	53	23.331	
Sacramento, Cal. (Transit)	8	5	58.387	
Seattle, Wash. (Transit)	8	9	20.358	
San Francisco, Cal. (Transit, Lafayette Park)	8	9	42.861	
Portland, Oregon (Transit)	8	10	42.838	

The paper also contains the longitudes of a few prominent observatories directly connected with the Coast and Geodetic Survey system. From these we take the longitude of

U. S. Naval Observatory — *new* site; meridian of clock room:—

h	m	s	s
5	8	15.784	± 0.050

Lick Observatory, Mt. Hamilton — meridian of transit house:—

h	m	s	s
8	6	34.895	± 0.057

Observations of the Companion to *Procyon*.

The following observations of *Procyon's* companion were made with our great refractor. For the purpose of showing the orbital motion, the discovery position is also given:—

Date. 1897.	Position Angle.	Distance.
October 8.	324°.1	4″.70
17.	323 .0	——
18.	323 .8	4 .76
29.	324 .2	4 .51
30.	326 .2	4 .59
November 1.	324 .3	4 .67
15.	325 .2	4 .71
Mean position for 1897.821	324 .40	4 .66
Discovery position 1896.812	318 .8	4 .59

Procyon's companion has finally been seen at two other observatories. Dr. See of the Lowell Observatory informs me that he and his assistant, Mr. Boothroyd, saw and measured the companion on the 1st of the present month. Professor Barnard writes that on the 3d, during a few moments of steadiness, the companion was "clearly and distinctly seen" with the great refractor of the Yerkes Observatory. So far as I know, these are the only observations made away from Mt. Hamilton. J. M. S.

Lick Observatory, November 18, 1897.

Lick Observatory Eclipse Expedition.

The Crocker eclipse expedition from the Lick Observatory, to observe the total solar eclipse of January 21–22, 1898, sailed from San Francisco on the steamship "China" on October 21st, going via Hongkong to Bombay. From this point it is expected to move inland some 150 or 200 miles, to a station near Karad. The expedition is in charge of Professor W. W. Campbell.